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PHOTOGRAPHIC INTERPRETATION REPORT

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PEI-CHING GUIDED MISSILE DEVELOPMENT
AND PRODUCTION CENTER
CHANG-HSIN-TIEN, CHINA

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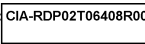
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PHOTOGRAPHIC INTERPRETATION REPORT

PEI-CHING GUIDED MISSILE DEVELOPMENT AND PRODUCTION CENTER CHANG-HSIN-TIEN, CHINA



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SUMMARY

The Pei-ching Guided Missile Development and Production Center, Chang-hsin-tien, China, is an elaborate complex for developing and testing liquid propellant rocket engines. It consists of a rocket engine test facility, a development and production facility, and associated housing and support areas.

The center grew rapidly during the 1959 to mid-1962 period; relatively little construction took place during the subsequent 2 years. Activity was renewed in late 1964 and has continued since that time. The excellent interpretability of the photography permits more precise identifications and a more detailed analysis of the facilities in the center than have been possible previously.

INTRODUCTION

The Pei-ching Guided Missile Development and Production Center (PGMDPC), Chang-hsin-tien is located 3 nautical miles (nm) west of Chang-hsin-tien and 13 nm southwest of Pei-ching (Peiping), China, at 39-49-30N 116-08-00E (Figure 1). The PGMDPC is bisected by a rail spur which continues on

to serve a mining area and a probable mining products storage area.

The section of the PGMDPC north of the rail spur is occupied by a separately secured rocket engine test facility, and the section south of the spur by a development and production facility, the oldest part of the PGMDPC. Various associated support and housing areas are located nearby.

The Rocket Engine Test Facility comprises 3 principal areas and 2 administration/support areas. This facility contains the structures and installations necessary to test-fire all the units of a liquid propellant rocket, including small components, gas generators, rocket engines, and an assembled rocket stage. Among the installations in the facility are 3 vertical test stands and a horizontal test site.

The Development and Production Facility includes 3 principal areas as well as areas for accommodating personnel. This facility contains structures for the probable production of scale models and prototypes as well as installations for research and aerodynamic developmental testing, including 2 probable test buildings and a wind tunnel.

Other facilities in and around the PGMDPC include a thermal

powerplant, a housing area to the east, a rectangular secured area of unidentified function, and the Pei-ching Petroleum Product Storage Area, Kang Wa

DESCRIPTION OF THE PGMDPC

The various facilities and their areas and installations are described in detail in the following sections of this report.

ROCKET ENGINE TEST FACILITY

The Rocket Engine Test Facility at the PGMDPC (Figures 2 and 3 and Table 1) comprises a site of approximately 1 square nm and is surrounded by a wall with guard towers at strategic locations. The facility was not present in only earth scarring was visible in and it was under construction in (see Table 2, page 9, for construction chronology).

The terrain of the facility rises approximately 200 feet in elevation from southeast to northwest; the line drawing of the facility layout (Figure 3) includes topographical information. The buildings within the facility are situated along fairly level ridges, and the test stands have been located to take advantage of a natural hillside for drainage. Rail spurs, roads, steamlines, and

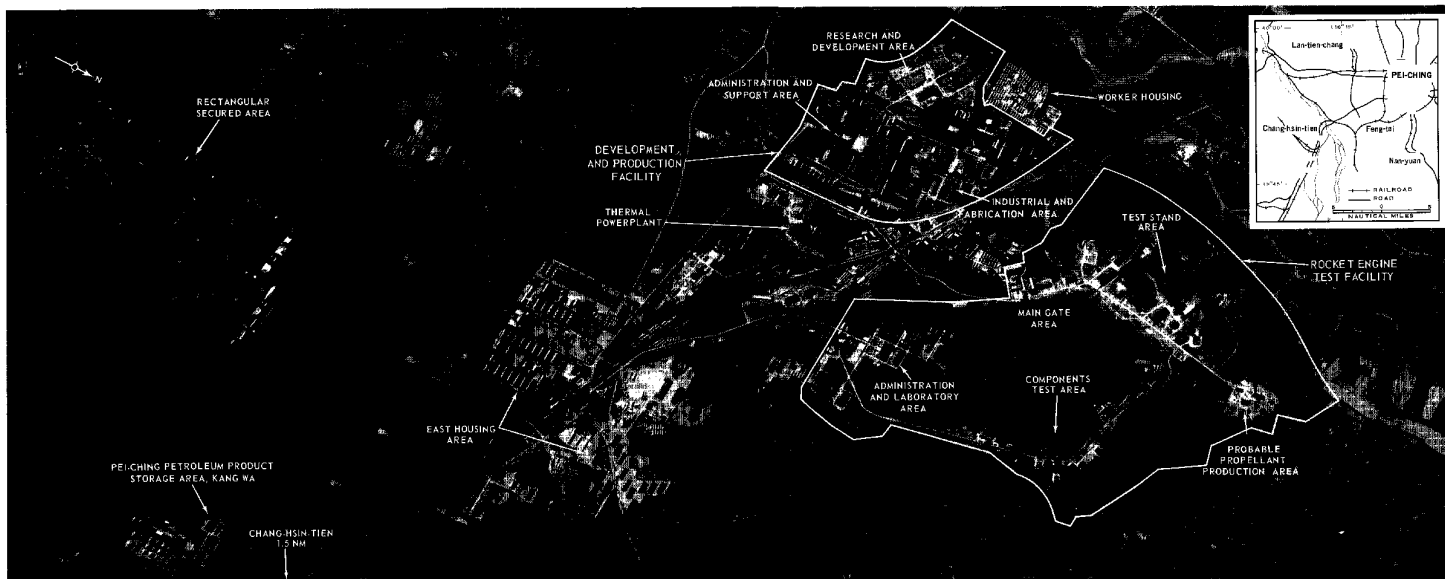


FIGURE 1. PEI-CHING GUIDED MISSILE DEVELOPMENT AND PRODUCTION CENTER, CHANG-HSIN-TIEN, CHINA.

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FIGURE 2. ROCKET ENGINE TEST FACILITY, PGMDPC

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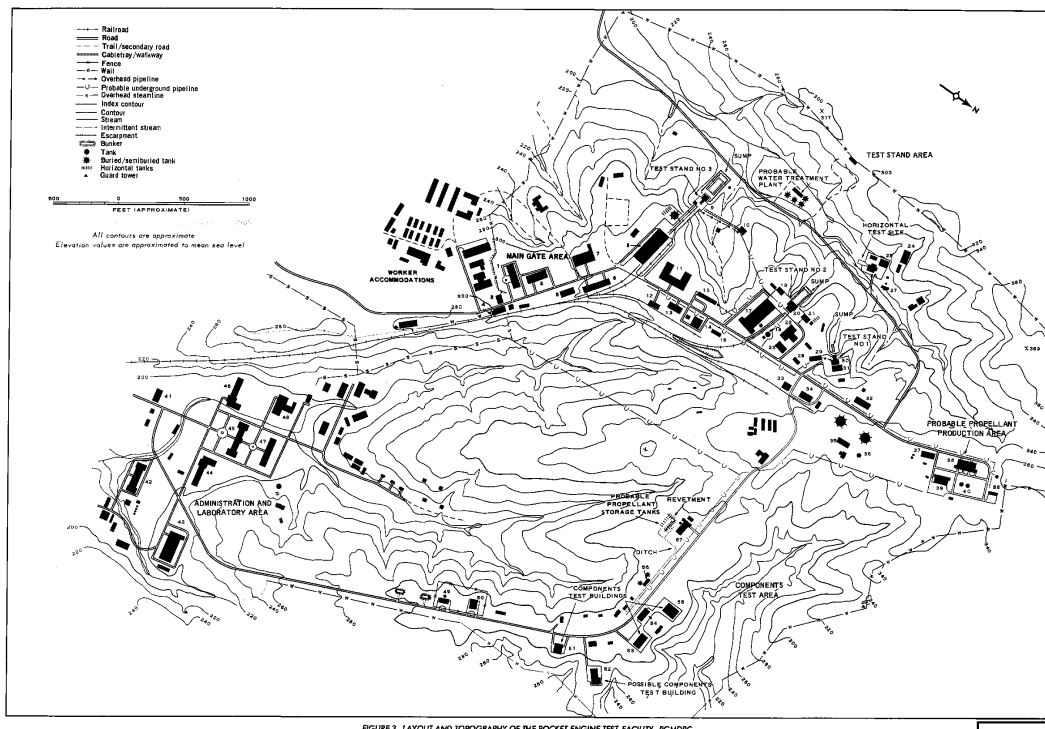


FIGURE 3. LAYOUT AND TOPOGRAPHY OF THE ROCKET ENGINE TEST FACILITY, PGMDPC.

Table 1. Structures at Rocket Engine Test Facility
(Item numbers are keyed to Figure 3)

Item	Description	Length (ft)	Width (ft)	Height (see note) (ft)	Roof Coverage (sq ft)
1	Admin bldg				
2	Vehicle shed				
3	Guard bldg				
4	Guard bldg				
5	Storage bldg				
6	Storage bldg				
7	Support bldg				
8	Checkout & assembly bldg				
9	Test stand no 3				
10	Control bldg				
11	Support bldg				
12	Rail-to-road transfer bldg				
13	Storage bldg				
14	Rail-to-road transfer bldg				
15	Propellant storage bldg				
16	Forced draft cooling tower				
17	Air liquefaction plant				
18	Prob cryogenic storage tank				
19	Prob control bldg				
20	Test stand no 2				
21	Prob control bldg				
22	Support bldg				
23	Support bldg				
24	Workshop				
25	Support bldg				
26	Horizontal test bldg				
27	Prob steamplant				
28	Tower				
29	Support bldg				
30	Test stand no 1				
31	Support bldg				
32	Admin/support bldg				
33	Rail-to-road transfer bldg				
34	Water pump house				
35	Water tower				
36	Prob admin & support bldg				
37	Prob propellant production bldg				
38	Prob propellant production bldg				
39	Prob propellant production bldg				
40	Prob propellant storage tanks (2)				
41	Guardhouse				
42	Laboratory bldg				
43	Fabrication bldg				
44	Engineering bldg				
45	Admin bldg				
46	Engineering bldg				
47	Engineering bldg				
48	Support bldg				
49	Support bldg				
50	Support bldg				
51	Components test bldg				
52	Pos component test bldg				
53	Components test bldg				
54	Control bldg				
55	Components test bldg				
56	Pump house				
57	Pos propellant handling bldg				
58	Suspect test bldg				

Note--All heights are to highest part of structure.
*Overall dimension.
**Height of superstructure.

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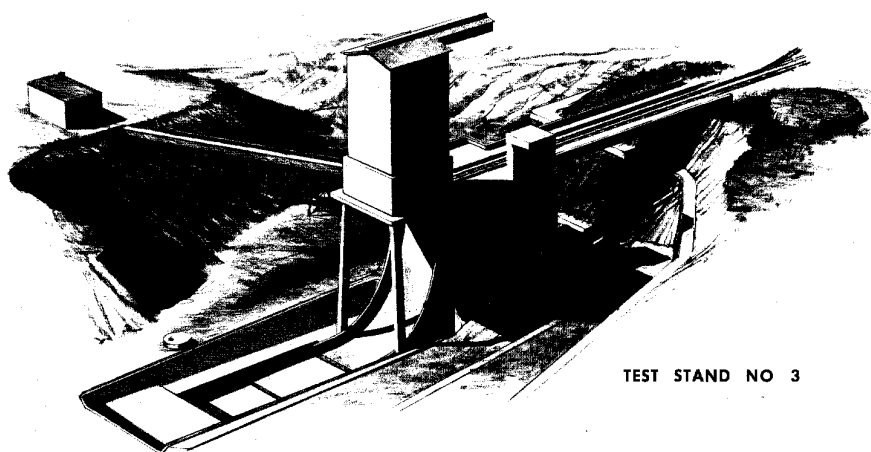
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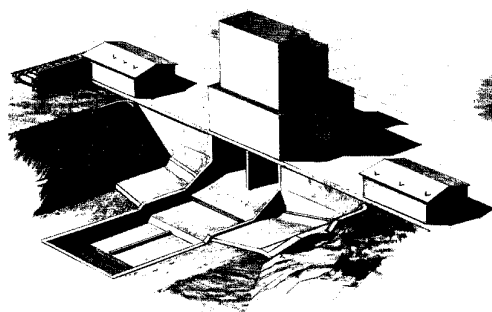
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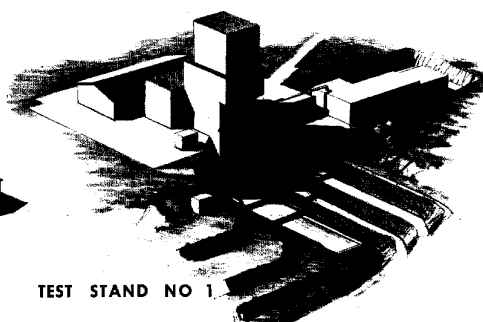
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TEST STAND NO 3



TEST STAND NO 2



TEST STAND NO 1

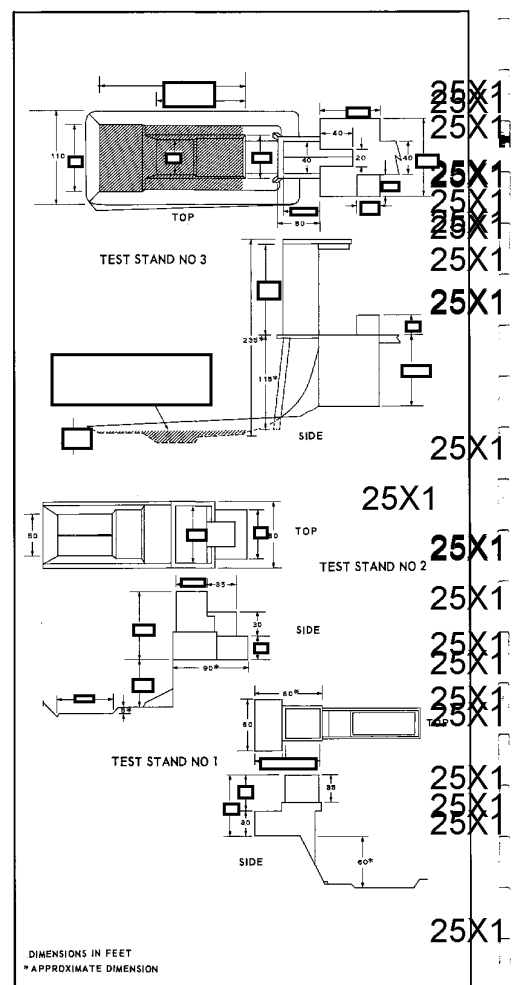


FIGURE 4. ARTIST'S CONCEPTION AND DIMENSIONS OF TEST STANDS NOS 1, 2, AND 3, PGMDPC.

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powerlines (the last not indicated on Figure 3) serve the facility; water storage tanks are located onsite.

The Rocket Engine Test Facility consists of the Main Gate Area, the Test Stand Area, the Probable Propellant Production Area, the Administration and Laboratory Area, and the Components Test Area. Construction is continuing at scattered locations in the facility. In the following descriptions of the 5 areas, all item numbers are keyed to Figure 3 and Table 1.

Main Gate Area

The Main Gate Area contains structures for receiving and checking incoming and outgoing material and personnel; it also includes administration buildings probably for the guard, maintenance, and worker-type personnel. An area of accommodation buildings for these personnel groups is located immediately outside the gate. Two guard buildings (items 3 and 4) are situated at the entrance to check both rail and road traffic; an administration building (item 1) and a vehicle shed (item 2) are nearby. The area also contains 2 storage buildings (items 5 and 6) and a support building (item 7).

Test Stand Area

The Test Stand Area contains 3 vertical rocket engine test stands, a horizontal test site, and associated support buildings. Four rail-to-road transfer buildings (items 12, 14, 33, and 34) are apparently the supply points for propellants and materials to support the test programs, and a storage building (item 13) is also nearby; rail cars have been observed at these locations on several dates. Two large buried tanks, a pumphouse (item 35), and a water tower (item 36) are on high ground at the northern end of the area. A probable water treatment plant is located on the western side of the area near the horizontal test site.

The horizontal test site is road served from the north end of the area and also directly from the main road serving the PGMDPC. The site contains a small horizontal test building (item 26) that apparently contains a single test cell with what resembles a small, hardened pad and a slightly inclined, fan-shaped blast deflector positioned in front of it. The deflector is approximately 85 feet long overall and 30 feet wide at its widest point. A workshop (item 24), a support building (item 25), and a small probable steamplant (item 27) are nearby.

Test Stand No 1 (item 30 and Figure 4) is a relatively small structure that appears to overhang somewhat a long, narrow blast pit that is approximately 60 feet below the level of the grade on which the stand is located. A small sump is situated at the end of the blast pit. Dark stains, probably indicative of test activity, were observed in this sump on photography of [redacted]. Since this test stand was present on photography of [redacted], although no details could be discerned, and it appeared to be complete in [redacted] it is not impossible that test activity occurred in [redacted] however, no evidence of testing is identifiable on late [redacted] photography. Dark stains were visible in the sump [redacted] photography; the stains were particularly evident on photography of [redacted] (Figure 5).

This test stand is road served only and appears to have been designed for test firing small liquid propellant rocket engines. It apparently has a single test position. A support building (item

31) is immediately behind the test stand. An overhead pipeline connects the stand to a low support building (item 29) that may be a propellant storage building or could serve as a control building. A 90-foot-tall tower (item 28) is situated southeast of the stand. This tower is almost square and has small windowlike openings down the side; a small structure is adjacent to the base of the tower, and a large buried tank is nearby. It would appear that item 28 is a water tower, although a large water tower (item 36) is nearby. Item 28 has previously been thought to be a hydrostatic test tower; however, no large vertical opening is visible, and the access to the tower resembles a sidewalk or very narrow roadway.

Test Stand No 2 (item 20 and Figure 4) is a 2-position test stand situated on the edge of an embankment. The stand was probably constructed by excavating a deep foundation and backfilling so as to form 2 tunnel-like blast deflectors. The blast pit descends in 3 levels with the sump divided down the middle and a trough at the bottom to catch the effluent. This stand was present on photography of [redacted] but no details could be seen; it appeared to be complete in [redacted] photography revealed some stains in the blast area which are probably indicative of test activity; earlier testing at this stand is entirely possible, however. Subsequent [redacted] photography also revealed stains in the blast area. A comparison of photography of [redacted] indicates a marked difference in the pattern of stains in the sump.

This test stand appears to have been designed for sequential and/or production-type testing of liquid propellant rocket engines, since the 2 test positions are identical; however, the 2-position design could have been planned to allow a lengthy setup time. Identical probable control buildings (items 19 and 21) are positioned on opposite sides of the test stand. A bank of horizontal tanks is located on the north side of the northern probable control building; these tanks are protected by deflector walls from blast effects from both Test Stands Nos 1 and 2. A support building (item 22) [redacted] high and having a recently constructed addition is approximately 100 feet northeast of Test Stand No 2, and a smaller support building (item 23), 30 feet high, is nearby. A rail spur enters the vicinity from the southeast and may provide rail service to the stand; however, it is probable that it serves an air liquefaction plant (item 17) located approximately 100 feet southeast of Test Stand No 2.

The air liquefaction plant (Figure 5) at PGMDPC closely resembles an air liquefaction plant identified at the Moskva Missile and Space Propulsion Development Center, Khimki 456, USSR, located in the outskirts of Moskva at 55-54N 37-26E (Figure 6). The Khimki plant has a main section measuring 200 by 100 feet by 50 feet high and an adjacent low section. An unusual rail-served tank is beside the building, and a cooling rack is nearby. This plant is approximately 600 feet from a vertical test stand; however, an older air liquefaction plant is only 50 feet from this test stand. The PGMDPC air liquefaction plant has a main section measuring [redacted] and an adjacent low section. An unusual rail-served tank is beside the building, and a cooling tower is nearby. A probable cryogenic storage tank, similar to tanks observed in the Soviet Union, is also nearby.

Tank-type rail cars have been observed at both plants, although these cars cannot be identified definitely as liquid oxygen cars.

Test Stand No 3 (item 9 and Figure 4) is a large vertical test stand designed for test firing large rocket engines and complete rocket stages. It was observed under construction in [redacted]

[redacted] it was nearing completion. Dark stains, probably from test activity, were observed in the sump of the blast pit on photography of [redacted] Probable testing was also indicated by stains or effluent in the sump in [redacted] reveals a good example of the stains observed in the sump, and photography of [redacted] shows the entire blast pit and sump filled with approximately 455,000 gallons of effluent (Figure 7). A comparison of the photography in Figure 7 also indicates that in an area of suspect buried tanks a perimeter road which was clearly defined on [redacted] had been torn up or fallen into disuse by [redacted] photography also reveals, near the large checkout and assembly building (item 8), rail activity which appears to be a single rail car approximately 80 feet long by 10 feet wide; however, there is some indication of a break in the middle of the car, which could mean that the object is 2 rail cars positioned end-to-end. A recent [redacted] report 1/ comments upon the significance of a single rail car this length as indicative of a missile carrier.

Test Stand No 3 is served by 2 rail spurs. One enters the large checkout and assembly building (item 8) and continues on to the base of the superstructure of the test stand (item 9); the second spur circumvents the checkout and assembly building en route to the test stand. A short additional spur leads from the checkout and assembly building to a point about midway between that structure and the test stand where it intersects the second rail spur. These spurs traverse an elevated ramp that provides access to the working level of the test stand. The superstructure of the stand is [redacted] from the level of the ramp to the eaves; a hoist crane extends from the peak of the eaves toward the checkout and assembly building. The superstructure projects outward from a massive base and over a large curved blast deflector; it is braced by 2 leglike supports. This test stand is very similar to the largest test stand at the Zagorsk Rocket Engine Test Facility in the USSR*. A large buried tank on the embankment near Test Stand No 3 at PGMDPC and a small tank and 2 possible sump pumps on the edge of the blast pit serve the blast deflector cooling system. A bank of horizontal tanks is nearby.

The control building (item 10) is connected to the test stand by a cableway/walkway, and 1 or more pipelines are visible near this cableway/walkway; 1 pipeline enters the ground behind the control building and proceeds underground toward the vicinity of the air liquefaction plant (item 17). A large U-shaped support building (item 11) and a possible propellant storage building (item 15) are near the stand.

Probable Propellant Production Area

The Probable Propellant Production Area (Figures 2 and 3) is located in the northern end of the Rocket Engine Test Facility

*A comparative study of rocket engine test facilities in the USSR is currently in preparation under NPIC Project 11382/66.

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FIGURE 5. AIR LIQUEFACTION PLANT IN THE TEST STAND AREA, PGMDPC.

and is the most recently constructed area in the facility. Earth scarring was observed on photography of [] and construction continued until [] when the area appeared to be complete or nearing completion. Figure 8 presents a comparison of the status of construction on [] when ditching and construction materials were still visible, and on [] when the area appeared to be complete or nearly so.

The area contains 2 probable liquid propellant production buildings (items 38 and 39, Figure 3), 2 storage tanks (item 40) that somewhat resemble the probable cryogenic storage tanks seen at several Soviet facilities, a probable administration and support building (item 37), and a possible tank or cooling tower. A small suspect test building (item 58) is served by a wide hardened pad. The type of propellants that will be produced in this area has not been determined.



FIGURE 6. AIR LIQUEFACTION PLANT AT THE MOSKVA MISSILE AND SPACE PRODUCTION DEVELOPMENT CENTER, KHIKMI 456, USSR.

Administration and Laboratory Area

The Administration and Laboratory Area (Figures 2 and 3) probably provides the design, engineering, laboratory, and administration facilities for the Rocket Engine Test Facility. A fabrication building (item 43) provides a structure for making models and equipment. The only changes which have occurred in this area since [] have been the completion of the security wall and a general landscaping of the area.

Components Test Area

The Components Test Area (Figures 2 and 3) was not evident on photography of [] earth scarring was visible in [] and the area appeared basically complete in []. Test activity was first revealed in this area on photography of [] 2/ the photography of [] also indicates possible test activity. The configuration of the components test

buildings is such that it is possible that testing could have occurred both before and since late [] but this cannot be confirmed.

The area contains 3 components test buildings (items 51, 53, and 55) and a possible components test building (item 52). A control building (item 54) is situated between 2 of the test buildings, and a pump house (item 56) and 2 buried tanks are nearby. The largest test building (item 55) apparently contains a single test cell that has a small pit in front of it. The medium-size test building (item 53) contains 2 test cells, each with an elongated pit in front of it. The smallest test building (item 51) contains 1 or possibly 2 or 3 test cells, 1 of which has a hardened pad in front of it.

A revetted rack of slender horizontal tanks, probably for propellant storage, and a nearby possible propellant handling building (item 57) have been constructed recently. New ditching is evident leading from this new construction toward the older part of the Components Test Area.

DEVELOPMENT AND PRODUCTION FACILITY

The Development and Production Facility at the PGMDPC comprises a site of approximately 0.66 square nm and is surrounded by a wall (Figures 1, 9, and 10). It was not present in [] was under construction in [] and appeared to be complete in [] new construction was observed in the facility (Table 2), and some construction activity is still evident on photography of []

This facility consists of the Administration and Support Area, the Industrial and Fabrication Area, and the separately secured Research and Development Area. An area of worker housing is adjacent on the northwest side, and the large thermal powerplant (discussed under the heading Other Facilities) is adjacent on the east. In the following descriptions of the 3 areas, all item numbers are keyed to Figure 10 and Table 3.

Administration and Support Area

The Administration and Support Area has remained practically unchanged since it was first observed in [] It probably was used for accommodations and offices for the Soviet technicians during the early part of the Communist Chinese missile program. It has probably continued to provide the main administration, support, and housing facilities for the PGMDPC. An area of open storage occupies the northeast corner of the Administration and Support Area.

Industrial and Fabrication Area

The Industrial and Fabrication Area has been changed very little since it was observed to be complete on photography of [] it was first seen under construction in [] This area probably initially provided specialized equipment; later probably produced test models, prototype missiles, and missile units; and may currently possess a limited capability for missile production.

Two industrial buildings (items 47 and 48, Figure 10) are outside the perimeter security wall, although they appear to be part

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quired pressurized gases to the test buildings. Disruptive painting and recently planted vegetation around these tanks indicate an attempt at camouflage or possibly protective measures against sun radiation heat. A high-bay support building (item 4) that appears to be separately secured, a possible cooling rack (item 1), a probable pumphouse (item 2), and several support buildings are also in the area. A separately secured, rail-served petroleum products transfer and blending station occupies the northern part of the area.

OTHER FACILITIES

Thermal Powerplant

The thermal powerplant (Figure 1) has been supplying electricity and steam to the entire PGMDPC since the plant was observed to be complete in [redacted]. Only ground scarring was visible in this area in [redacted]. Smoke has been observed issuing from the stack on photography of several different dates.

East Housing Area

High-standard housing and related accommodation buildings are provided in the East Housing Area (Figure 1). This area was first observed under construction in [redacted] and appeared to be basically complete in [redacted]. Subsequent photography, however, has revealed a slow but continuous construction of high-standard housing buildings in the area.

Rectangular Secured Area and Pei-ching Petroleum Product Storage Area, Kang Wa

The Rectangular Secured Area, immediately south of the PGMDPC, appears to be related to the center although its function cannot be determined. There have been no significant changes in this area since it appeared to be complete in [redacted].

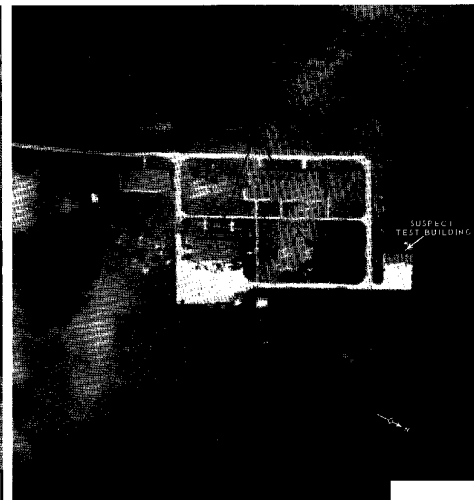
The Pei-ching Petroleum Product Storage Area, Kang Wa, provides bulk storage facilities for a variety of petroleum products. This area appears to be virtually unchanged since it was observed as complete in [redacted].



FIGURE 8. PROBABLE PROPELLANT PRODUCTION AREA, PGMDPC.

CONCLUSIONS

A steady, rapid growth took place at the PGMDPC between [redacted] when it was first identified on photography, and [redacted] when most of the facilities were basically complete; this period coincides with the period of good relations between Communist China and the USSR. Photography of [redacted] through that of [redacted] revealed relatively little construction activity, except for the completion of the large vertical test stand and the completion of other facilities which apparently had



been planned previously. Photography since [redacted] has indicated renewed activity, including final landscaping and finishing touches at older facilities, construction of new items, and apparently a more active testing program. The excellent-quality photography since [redacted] has revealed many additional details of construction and aided in the identification of facilities.

The table on the facing page (Table 2) presents a chronology of activity and construction at the PGMDPC.

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Table 2. Chronology of Construction and Activity at PGMDPC

Section of PGMDPC										
ROCKET ENGINE TEST FACILITY	scarring	u/c	u/c	u/c	u/c	u/c	u/c	u/c	u/c	u/c
Test Stand Area										
Test Stands Nos 1 & 2	not present	present	complete.....			probably testing	probably testing	probably testing	testing	testing
Test Stand No 3	not present	u/c	u/c	u/c	nearing completion	probably testing	probably testing	probably testing	testing	testing
Horizontal Test Site	not present	scarring	complete.....	testing	--	--	--	--	possibly testing	--
Probable Propellant Production Area	not present.....				scarring	u/c	u/c	u/c	u/c	nearing completion
Components Test Area	not present	scarring	complete.....					testing	possibly testing	construction activity
DEVELOPMENT AND PRODUCTION FACILITY	u/c	u/c	complete.....				new construction	continuing construction	continuing construction	new construction
Administration and Support Area	complete.....									
Industrial and Fabrication Area	u/c	u/c	complete.....							
Research and Development Area	not present	u/c	complete.....			new construction	continuing construction	continuing construction	new construction	
Wind Tunnel	not present.....					u/c	u/c	u/c	u/c	complete
OTHER FACILITIES										
Thermal Powerplant	scarring	complete	operating.....							
East Housing Area	not present	u/c	basically complete		low level of continuing construction.....					
Rectangular Secured Area	not present	scarring	u/c	u/c	complete.....					

NEGATION DATE OF PGMDPC

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FIGURE 9. DEVELOPMENT AND PRODUCTION FACILITY, PGMDPC.

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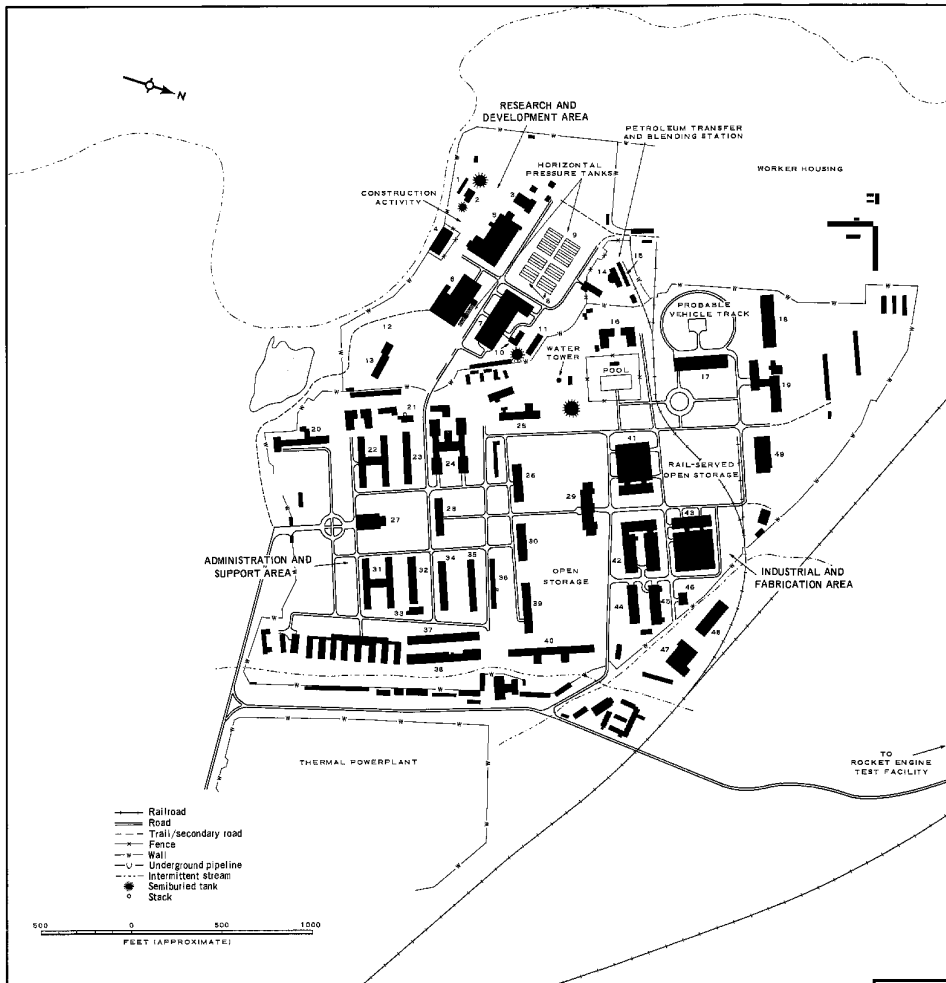


FIGURE 10. LAYOUT OF THE DEVELOPMENT AND PRODUCTION FACILITY, PGMDPC.

Table 3. Structures at Development and Production Facility
(Item numbers are keyed to Figure 10)

Item	Description	Length (ft)	Width (ft)	Roof Coverage (sq ft)
1	Poss cooling rack			
2	Prob pumphouse			
3	Support bldg			
4	High-bay support bldg			
5	Prob test bldg			
6	Prob test bldg			
7	Prob compressor bldg			
8	Horizontal pressure tanks (14)			
9	Horizontal pressure tanks (35)			
10	Prob pumphouse			
11	Forced draft cooling tower			
12	Wind tunnel			
13	Support bldg			
14	Petroleum blending bldg			
15	Petroleum products unloading dock			
16	Accommodation/admin bldg			
17	Prob vehicle shed			
18	Prob vehicle shed			
19	Admin bldg			
20	Storage bldg			
21	Boilerhouse			
22	Barracks			
23	Barracks			
24	Messhall			
25	Support bldg			
26	Support bldg			
27	Admin bldg & auditorium			
28	Admin bldg			
29	Engineering & admin bldg			
30	Support bldg			
31	Barracks			
32	Barracks			
33	Boilerhouse			
34	Barracks			
35	Support bldg			
36	Poss hospital			
37	Storage bldg			
38	Storage bldg			
39	Support bldg			
40	Storage bldg			
41	Fabrication bldg			
42	Workshop bldg			
43	Fabrication & assembly bldg			
44	Industrial bldg			
45	Industrial bldg			
46	Support bldg			
47	Industrial bldg			
48	Industrial bldg			
49	Prob storage bldg			

*Overall dimension.

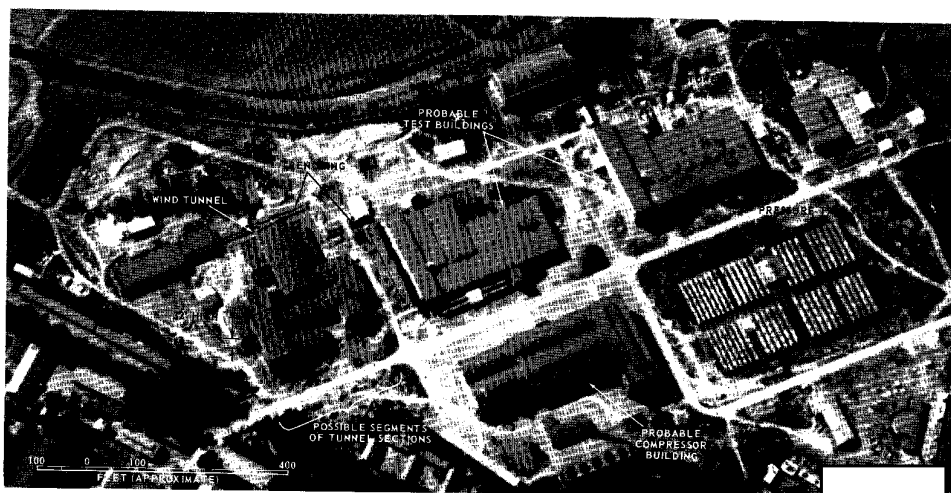
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25X1 []

TOP SECRET []

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25X1
5X1 []



25X1

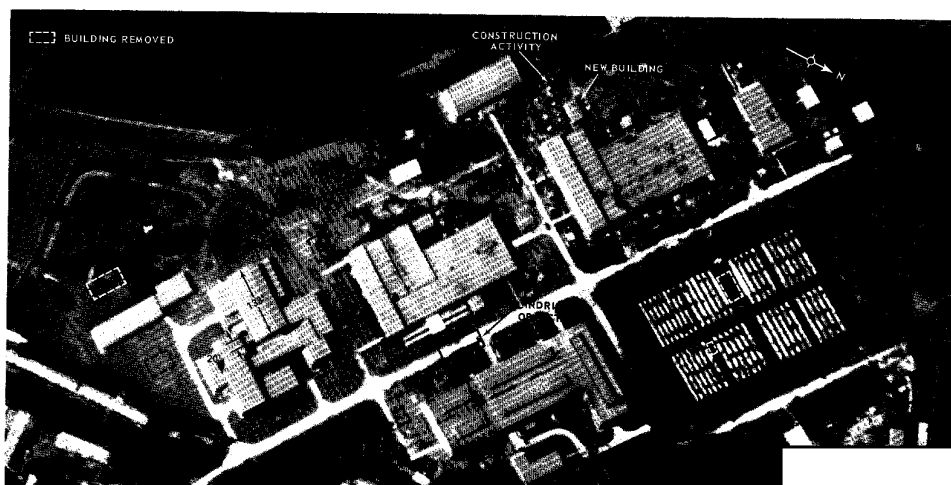


FIGURE 11. RESEARCH AND DEVELOPMENT AREA, PGMDPC.

25X1
25X1
25X1

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[] 25X1

25X1

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